SEQUENCE LISTING

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Ray, John

<120> Genetic Method For The Expression of Polyproteins in Plants

<130> PPD50348/UST

<140>
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<150> GB 9818001.1
<151> 1998-08-18

<150> GB 9826753.7
<151> 1998-12-14

<150> PCT/GB99/02716
<151> 1999-08-17

<160> 81

<170> PatentIn Ver. 2.1

<210> 1
<211> 446
<212> DNA
<213> Dahlia merckii

<400> 1
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tatgcgagaa agctagcaag acatggtcgg gaaactgtgg caatacggga cattgtgaca 240
accaatgtaa atcatgggag ggtgcggccc atggagcgtg tcatgtgcgt aacgggaaac 300
acatgtgttt ctgttacttc aattgtaaaa aagccgaaaa gcttgctcaa gacaaactta 360
aagccgaaca actcgctcaa gacaaactta atgcccaaaa gcttgaccgt gatgccaaga 420
aagtggttcc aaacgttgaa catccg 446

<210> 2
<211> 118
<212> PRT
<213> Dahlia merckii

<400> 2
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1 5 10 15

Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
20 25 30

Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
35 40 45

Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His

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     50                  55                  60

Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Lys Lys
 65                  70                  75                  80

Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu Ala Gln
                 85                  90                  95

Asp Lys Leu Asn Ala Gln Lys Leu Asp Arg Asp Ala Lys Lys Val Val
            100                 105                 110

Pro Asn Val Glu His Pro
        115
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<210> 3
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Linker propeptide

<400> 3
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Ser Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Val Glu Pro Gly
  1               5                  10                  15
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<210> 4
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Linker propeptide

<400> 4
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Lys Lys Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu
  1               5                  10                  15

Ile Gly Lys Arg
            20
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<210> 5
<211> 40
<212> PRT
<213> Dahlia merckii

<400> 5
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Lys Lys Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu
  1               5                  10                  15

Ala Gln Asp Lys Leu Asn Ala Gln Lys Leu Asp Arg Asp Ala Lys Lys
            20                  25                  30
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Val Val Pro Asn Val Glu His Pro
35 40

<210> 6
<211> 44
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Linker propeptide

<400> 6
Lys Lys Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu
1 5 10 15

Ala Gln Asp Lys Leu Asn Ala Gln Lys Leu Asp Arg Asp Ala Lys Lys
20 25 30

Val Val Pro Asn Val Glu His Pro Ile Gly Lys Arg
35 40

<210> 7
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Linker propeptide

<400> 7
Ala Ser Thr Thr Val Asp His Gln Ala Asp Val Ala Ala Thr Lys Thr
1 5 10 15

Ile Gly Lys Arg
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<210> 8
<211> 31
<212> PRT
<213> Amaranthus caudatus

<400> 8
Ala Ser Thr Thr Val Asp His Gln Ala Asp Val Ala Ala Thr Lys Thr
1 5 10 15

Ala Lys Asn Pro Thr Asp Ala Lys Leu Ala Gly Ala Gly Ser Pro
20 25 30

<210> 9
<211> 522

<212> DNA
<213> Artificial Sequence

<220>
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<220>
<221> CDS
<222> (76)..(513)

<400> 9
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atttacaatt acacc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt 111
Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val
1 5 10

ctg atc ctt ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga 159
Leu Ile Leu Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly
15 20 25

gaa cta tgc gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac 207
Glu Leu Cys Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn
30 35 40

acg gga cat tgt gac aac caa tgt aaa tca tgg gag ggt gcg gcc cat 255
Thr Gly His Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His
45 50 55 60

gga gcg tgt cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc 303
Gly Ala Cys His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe
65 70 75

aat tgt tcc aac gct gct gac gag gtg gct acc cca gag gac gtg gag 351
Asn Cys Ser Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Val Glu
80 85 90

cca gga cag aag ttg tgc caa agg cca agt ggg aca tgg tca gga gtc 399
Pro Gly Gln Lys Leu Cys Gln Arg Pro Ser Gly Thr Trp Ser Gly Val
95 100 105

tgt gga aac aat aac gca tgc aag aat cag tgc att aga ctt gag aaa 447
Cys Gly Asn Asn Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys
110 115 120

gca cga cat gga tct tgc aac tat gtc ttc cca gct cac aag tgt atc 495
Ala Arg His Gly Ser Cys Asn Tyr Val Phe Pro Ala His Lys Cys Ile
125 130 135 140

tgc tac ttt cct tgt taa taggagctc 522
Cys Tyr Phe Pro Cys
145

<210> 10
<211> 145
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic sequence

<400> 10

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Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
  1               5                  10                  15

Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
             20                  25                  30

Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
         35                  40                  45

Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
     50                  55                  60

Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser Asn
 65                  70                  75                  80

Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Val Glu Pro Gly Gln Lys
                 85                  90                  95

Leu Cys Gln Arg Pro Ser Gly Thr Trp Ser Gly Val Cys Gly Asn Asn
            100                 105                 110

Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly
        115                 120                 125

Ser Cys Asn Tyr Val Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro
    130                 135                 140

Cys
145
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<210> 11
<211> 534
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<220>
<221> CDS
<222> (76)..(525)

<400> 11

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               Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val
                 1               5                  10

ctg atc ctt ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga  159
Leu Ile Leu Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly
         15                  20                  25

gaa cta tgc gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac  207
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Glu Leu Cys Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn
     30                  35                  40

acg gga cat tgt gac aac caa tgt aaa tca tgg gag ggt gcg gcc cat   255
Thr Gly His Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His
 45                  50                  55                  60

gga gcg tgt cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc   303
Gly Ala Cys His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe
                 65                  70                  75

aat tgt aaa aaa gcc gaa aag ctt gct caa gac aaa ctt aaa gcc gaa   351
Asn Cys Lys Lys Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu
             80                  85                  90

caa ctc atc gga aag agg cag aag ttg tgc caa agg cca agt ggg aca   399
Gln Leu Ile Gly Lys Arg Gln Lys Leu Cys Gln Arg Pro Ser Gly Thr
         95                  100                 105

tgg tca gga gtc tgt gga aac aat aac gca tgc aag aat cag tgc att   447
Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys Asn Gln Cys Ile
    110                 115                 120

aga ctt gag aaa gca cga cat gga tct tgc aac tat gtc ttc cca gct   495
Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr Val Phe Pro Ala
125                 130                 135                 140

cac aag tgt atc tgc tac ttt cct tgt taa taggagctc                534
His Lys Cys Ile Cys Tyr Phe Pro Cys
                145
```

<210> 12
<211> 149
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<400> 12

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Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
  1               5                  10                  15

Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
             20                  25                  30

Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
         35                  40                  45

Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
     50                  55                  60

Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Lys Lys
 65                  70                  75                  80

Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu Ile Gly
                 85                  90                  95

Lys Arg Gln Lys Leu Cys Gln Arg Pro Ser Gly Thr Trp Ser Gly Val
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100 105 110

Cys Gly Asn Asn Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys
115 120 125

Ala Arg His Gly Ser Cys Asn Tyr Val Phe Pro Ala His Lys Cys Ile
130 135 140

Cys Tyr Phe Pro Cys
145

<210> 13
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Oligonucleotide

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<221> misc_feature
<222> (6)
<223> n is any residue

<220>
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<223> n is any residue

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<220>
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<223> n is any residue

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<400> 13
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<210> 14
<211> 8
<212> PRT
<213> Dahlia merckii

<400> 14
Cys Glu Lys Ala Ser Lys Thr Trp
1 5

<210> 15
<211> 606
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<220>
<221> CDS
<222> (76)..(597)

<400> 15
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Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val
1 5 10

ctg atc ctt ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga 159
Leu Ile Leu Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly
15 20 25

gaa cta tgc gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac 207
Glu Leu Cys Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn
30 35 40

acg gga cat tgt gac aac caa tgt aaa tca tgg gag ggt gcg gcc cat 255
Thr Gly His Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His
45 50 55 60

gga gcg tgt cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc 303
Gly Ala Cys His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe
65 70 75

aat tgt aaa aaa gcc gaa aag ctt gct caa gac aaa ctt aaa gcc gaa 351
Asn Cys Lys Lys Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu
80 85 90

caa ctc gct caa gac aaa ctt aat gcc caa aag ctt gac cgt gat gcc 399
Gln Leu Ala Gln Asp Lys Leu Asn Ala Gln Lys Leu Asp Arg Asp Ala
95 100 105

aag aaa gtg gtt cca aac gtt gaa cat ccg atc gga aag agg cag aag 447
Lys Lys Val Val Pro Asn Val Glu His Pro Ile Gly Lys Arg Gln Lys
110 115 120

ttg tgc caa agg cca agt ggg aca tgg tca gga gtc tgt gga aac aat 495
Leu Cys Gln Arg Pro Ser Gly Thr Trp Ser Gly Val Cys Gly Asn Asn
125 130 135 140

aac gca tgc aag aat cag tgc att aga ctt gag aaa gca cga cat gga 543
Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly
145 150 155

tct tgc aac tat gtc ttc cca gct cac aag tgt atc tgc tac ttt cct 591
Ser Cys Asn Tyr Val Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro
160 165 170

tgt taa taggagctc 606
Cys

<210> 16
<211> 173
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<400> 16
Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
1 5 10 15

Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
20 25 30

Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
35 40 45

Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
50 55 60

Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Lys Lys
65 70 75 80

Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu Ala Gln
85 90 95

Asp Lys Leu Asn Ala Gln Lys Leu Asp Arg Asp Ala Lys Lys Val Val
100 105 110

Pro Asn Val Glu His Pro Ile Gly Lys Arg Gln Lys Leu Cys Gln Arg
115 120 125

Pro Ser Gly Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys
130 135 140

Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr
145 150 155 160

Val Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
165 170

<210> 17
<211> 534
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<220>
<221> CDS
<222> (76)..(525)

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atttacaatt acacc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt 111
Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val
1 5 10

ctg atc ctt ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga 159
Leu Ile Leu Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly
15 20 25

gaa cta tgc gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac 207
Glu Leu Cys Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn
30 35 40

acg gga cat tgt gac aac caa tgt aaa tca tgg gag ggt gcg gcc cat 255
Thr Gly His Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His
45 50 55 60

gga gcg tgt cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc 303
Gly Ala Cys His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe
65 70 75

aat tgt gcc agt act act gtg gat cac caa gct gat gtt gct gcc acc 351
Asn Cys Ala Ser Thr Thr Val Asp His Gln Ala Asp Val Ala Ala Thr
80 85 90

aaa act atc gga aag agg cag aag ttg tgc caa agg cca agt ggg aca 399
Lys Thr Ile Gly Lys Arg Gln Lys Leu Cys Gln Arg Pro Ser Gly Thr
95 100 105

tgg tca gga gtc tgt gga aac aat aac gca tgc aag aat cag tgc att 447
Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys Asn Gln Cys Ile
110 115 120

aga ctt gag aaa gca cga cat gga tct tgc aac tat gtc ttc cca gct 495
Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr Val Phe Pro Ala
125 130 135 140

cac aag tgt atc tgc tac ttt cct tgt taa taggagctc 534
His Lys Cys Ile Cys Tyr Phe Pro Cys
145

<210> 18
<211> 149
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<400> 18
Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
1 5 10 15

Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
20 25 30

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Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
         35                  40                  45

Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
     50                  55                  60

Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ala Ser
 65                  70                  75                  80

Thr Thr Val Asp His Gln Ala Asp Val Ala Ala Thr Lys Thr Ile Gly
                 85                  90                  95

Lys Arg Gln Lys Leu Cys Gln Arg Pro Ser Gly Thr Trp Ser Gly Val
            100                 105                 110

Cys Gly Asn Asn Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys
        115                 120                 125

Ala Arg His Gly Ser Cys Asn Tyr Val Phe Pro Ala His Lys Cys Ile
    130                 135                 140

Cys Tyr Phe Pro Cys
145
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<210> 19
<211> 316
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<220>
<221> CDS
<222> (76)..(312)

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                Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val
                  1               5                  10

ctg atc ctt ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga   159
Leu Ile Leu Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly
         15                  20                  25

gaa cta tgc gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac   207
Glu Leu Cys Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn
     30                  35                  40

acg gga cat tgt gac aac caa tgt aaa tca tgg gag ggt gcg gcc cat   255
Thr Gly His Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His
 45                  50                  55                  60

gga gcg tgt cat gtg cgt aat ggg aaa cac atg tgt ttc tgt tac ttc   303
Gly Ala Cys His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe
                 65                  70                  75
```

aat tgt tga gctc 316
Asn Cys

<210> 20
<211> 78
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<400> 20
Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
1 5 10 15

Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
20 25 30

Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
35 40 45

Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
50 55 60

Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys
65 70 75

<210> 21
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Linker peptide

<400> 21
Ser Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Val Glu
1 5 10

<210> 22
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Linker peptide

<400> 22
Ser Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Asp
1 5 10

<210> 23
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Linker peptide

<400> 23
Ser Asn Ala Ala Asp Glu Val Ala Thr Pro Glu
1 5 10

<210> 24
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Linker peptide

<400> 24
Ala Asn Ala Glu Glu Ala Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu
1 5 10 15

Leu Ala Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp
20 25

<210> 25
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Linker propeptide

<400> 25
Lys Lys Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu
1 5 10 15

Ile Gly Lys Arg Ile Gly Lys Arg Ile Gly Lys Arg
20 25

<210> 26
<211> 52
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Linker propeptide

<400> 26
Lys Lys Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu
1 5 10 15

Ala Gln Asp Lys Leu Asn Ala Gln Lys Leu Asp Arg Asp Ala Lys Lys
20 25 30

Val Val Pro Asn Val Glu His Pro Ile Gly Lys Arg Ile Gly Lys Arg
35 40 45

Ile Gly Lys Arg
50

<210> 27
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Linker propeptide

<400> 27
Ala Ser Thr Thr Val Asp His Gln Ala Asp Val Ala Ala Thr Lys Thr
1 5 10 15

Ile Gly Lys Arg Ile Gly Lys Arg Ile Gly Lys Arg
20 25

<210> 28
<211> 29
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Linker propeptide

<400> 28
Ser Asn Ala Ala Asp Glu Val Ala Thr Gln Leu Leu Asn Phe Asp Leu
1 5 10 15

Leu Lys Leu Ala Gly Asp Val Glu Ser Asn Pro Gly Pro
20 25

<210> 29
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Linker peptide

<400> 29
Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Val Glu Pro Gly

1 5 10 15

<210> 30
<211> 446
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<220>
<221> CDS
<222> (3)..(437)

<400> 30

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     1               5                  10                  15

ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc   95
Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys
                 20                  25                  30

gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac acg gga cat   143
Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His
             35                  40                  45

tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt   191
Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys
         50                  55                  60

cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt aac   239
His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Asn
     65                  70                  75

gcg gcc gac gag gtg gct acc cca gag gac gtg gaa cct ggt cag aag   287
Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Val Glu Pro Gly Gln Lys
 80                  85                  90                  95

ttg tgc caa agg cca agt cgt aca tgg tca gga gtc tgt gga aac aat   335
Leu Cys Gln Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn
                100                 105                 110

aac gca tgc aag aat cag tgc att aga ctt gag aaa gca cga cat gga   383
Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly
            115                 120                 125

tct tgc aac tat cgt ttc cca gct cac aag tgt atc tgc tac ttt cct   431
Ser Cys Asn Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro
        130                 135                 140

tgt taa taggagctc                                                446
Cys
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<210> 31
<211> 144

<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<400> 31
Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
1 5 10 15

Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
20 25 30

Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
35 40 45

Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
50 55 60

Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Asn Ala
65 70 75 80

Ala Asp Glu Val Ala Thr Pro Glu Asp Val Glu Pro Gly Gln Lys Leu
85 90 95

Cys Gln Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn
100 105 110

Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser
115 120 125

Cys Asn Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
130 135 140

<210> 32
<211> 443
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<220>
<221> CDS
<222> (3)..(434)

<400> 32
cc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt 47
Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu
1 5 10 15

ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc 95
Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys
20 25 30

gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac acg gga cat 143
Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His

```
                35                  40                  45

tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt   191
Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys
          50                  55                  60

cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt tcc   239
His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser
      65                  70                  75

aac gcg gcc gac gag gtg gct acc cca gag gac gtg gaa cag aag ttg   287
Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Val Glu Gln Lys Leu
  80                  85                  90                  95

tgc caa agg cca agt cgt aca tgg tca gga gtc tgt gga aac aat aac   335
Cys Gln Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn
                 100                 105                 110

gca tgc aag aat cag tgc att aga ctt gag aaa gca cga cat gga tct   383
Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser
             115                 120                 125

tgc aac tat cgt ttc cca gct cac aag tgt atc tgc tac ttt cct tgt   431
Cys Asn Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
         130                 135                 140

taa taggagctc                                                    443
```

<210> 33
<211> 143
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<400> 33

```
Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
  1               5                  10                  15

Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
             20                  25                  30

Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
         35                  40                  45

Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
     50                  55                  60

Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser Asn
 65                  70                  75                  80

Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Val Glu Gln Lys Leu Cys
                 85                  90                  95

Gln Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala
             100                 105                 110
```

```
Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys
        115                 120                 125

Asn Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
    130                 135                 140



<210> 34
<211> 437
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      sequence

<220>
<221> CDS
<222> (3)..(428)

<400> 34
cc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt    47
   Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu
     1               5                  10                  15

ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc   95
Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys
                 20                  25                  30

gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac acg gga cat   143
Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His
             35                  40                  45

tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt   191
Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys
         50                  55                  60

cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt tcc   239
His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser
     65                  70                  75

aac gcg gcc gac gag gtg gct acc cca gag gac cag aag ttg tgc caa   287
Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Gln Lys Leu Cys Gln
 80                  85                  90                  95

agg cca agt cgt aca tgg tca gga gtc tgt gga aac aat aac gca tgc   335
Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys
                100                 105                 110

aag aat cag tgc att aga ctt gag aaa gca cga cat gga tct tgc aac   383
Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn
            115                 120                 125

tat cgt ttc cca gct cac aag tgt atc tgc tac ttt cct tgt taa       428
Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
        130                 135                 140

taggagctc                                                        437
```

<210> 35
<211> 141
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<400> 35
Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
1 5 10 15

Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
20 25 30

Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
35 40 45

Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
50 55 60

Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser Asn
65 70 75 80

Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Gln Lys Leu Cys Gln Arg
85 90 95

Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys
100 105 110

Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr
115 120 125

Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
130 135 140

<210> 36
<211> 434
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<220>
<221> CDS
<222> (3)..(425)

<400> 36
cc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt 47
Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu
1 5 10 15

ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc 95
Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys
20 25 30

```
gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac acg gga cat   143
Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His
             35                  40                  45

tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt   191
Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys
         50                  55                  60

cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt tcc   239
His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser
     65                  70                  75

aac gcg gcc gac gag gtg gct acc cca gag cag aag ttg tgc caa agg   287
Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Gln Lys Leu Cys Gln Arg
 80                  85                  90                  95

cca agt cgt aca tgg tca gga gtc tgt gga aac aat aac gca tgc aag   335
Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys
                100                 105                 110

aat cag tgc att aga ctt gag aaa gca cga cat gga tct tgc aac tat   383
Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr
            115                 120                 125

cgt ttc cca gct cac aag tgt atc tgc tac ttt cct tgt taa taggagctc 434
Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
        130                 135                 140
```

<210> 37
<211> 140
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<400> 37

```
Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
  1               5                  10                  15

Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
             20                  25                  30

Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
         35                  40                  45

Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
     50                  55                  60

Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser Asn
 65                  70                  75                  80

Ala Ala Asp Glu Val Ala Thr Pro Glu Gln Lys Leu Cys Gln Arg Pro
                 85                  90                  95

Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys Asn
            100                 105                 110

Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr Arg
```

```
        115                 120                 125

Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
    130                 135                 140



<210> 38
<211> 485
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      sequence

<220>
<221> CDS
<222> (3)..(476)

<400> 38
cc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt    47
   Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu
     1               5                  10                  15

ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc   95
Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys
                 20                  25                  30

gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac acg gga cat   143
Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His
             35                  40                  45

tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt   191
Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys
         50                  55                  60

cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt gct   239
His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ala
     65                  70                  75

aac gct gag gaa gct gct gct gct att cct gaa gct tct gaa gaa ctt   287
Asn Ala Glu Glu Ala Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu Leu
 80                  85                  90                  95

gct caa gaa gaa gct cct gtg tac agt gaa gat cag aag ttg tgc caa   335
Ala Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp Gln Lys Leu Cys Gln
                100                 105                 110

agg cca agt cgt aca tgg tca gga gtc tgt gga aac aat aac gca tgc   383
Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys
            115                 120                 125

aag aat cag tgc att aga ctt gag aaa gca cga cat gga tct tgc aac   431
Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn
        130                 135                 140

tat cgt ttc cca gct cac aag tgt atc tgc tac ttt cct tgt taa       476
Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
    145                 150                 155
```

taggagctc 485

<210> 39
<211> 157
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<400> 39

```
Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
 1               5                  10                  15

Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
            20                  25                  30

Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
        35                  40                  45

Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
    50                  55                  60

Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ala Asn
65                  70                  75                  80

Ala Glu Glu Ala Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu Leu Ala
                85                  90                  95

Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp Gln Lys Leu Cys Gln Arg
            100                 105                 110

Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys
        115                 120                 125

Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr
    130                 135                 140

Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
145                 150                 155
```

<210> 40
<211> 1093
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<220>
<221> CDS
<222> (3)..(1085)

<400> 40

```
cc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt    47
   Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu
```

```
     1               5                  10                  15

ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc   95
Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys
                20                  25                  30

gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac acg gga cat  143
Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His
            35                  40                  45

tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt  191
Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys
        50                  55                  60

cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aac tgc gct  239
His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ala
    65                  70                  75

aac gct gag gaa gct gct gct gct att cct gaa gct tct gaa gaa ctt  287
Asn Ala Glu Glu Ala Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu Leu
80                  85                  90                  95

gct caa gaa gaa gct cct gtg tac agt gaa gat cag aag ttg tgc caa  335
Ala Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp Gln Lys Leu Cys Gln
                100                 105                 110

agg cca agt cgt aca tgg tca gga gtc tgt gga aac aat aac gca tgc  383
Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys
            115                 120                 125

aag aat cag tgc att aga ctt gag aaa gca cga cat gga tct tgc aac  431
Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn
        130                 135                 140

tat cgt ttc cca gct cac aag tgt atc tgc tac ttc cct tgt gcg aat  479
Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys Ala Asn
    145                 150                 155

gct gaa gaa gct gct gct gct att cct gaa gct tct gaa gaa ctt gct  527
Ala Glu Glu Ala Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu Leu Ala
160                 165                 170                 175

caa gaa gaa gca ccg gtt tac tct gaa gat gac gga gtg aag ctc tgc  575
Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp Asp Gly Val Lys Leu Cys
                180                 185                 190

gac gtg cca tcc gga acc tgg tcc gga cac tgc ggt tcc tcc agc aag  623
Asp Val Pro Ser Gly Thr Trp Ser Gly His Cys Gly Ser Ser Ser Lys
            195                 200                 205

tgc agc caa caa tgc aag gac agg gag cac ttc gct tac gga gga gct  671
Cys Ser Gln Gln Cys Lys Asp Arg Glu His Phe Ala Tyr Gly Gly Ala
        210                 215                 220

tgc cac tac caa ttc cca tcc gtg aag tgc ttc tgc aag agg caa tgc  719
Cys His Tyr Gln Phe Pro Ser Val Lys Cys Phe Cys Lys Arg Gln Cys
    225                 230                 235

gct aac gct gag gaa gct gct gct gct att cct gaa gct tct gaa gaa  767
Ala Asn Ala Glu Glu Ala Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu
240                 245                 250                 255
```

```
ctt gct caa gaa gaa gct cct gtg tac agt gaa gat cag aac ata tgc   815
Leu Ala Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp Gln Asn Ile Cys
                260                 265                 270

cca agg gtt aat cga att gtg aca ccc tgt gtg gcc tac gga ctc gga   863
Pro Arg Val Asn Arg Ile Val Thr Pro Cys Val Ala Tyr Gly Leu Gly
            275                 280                 285

agg gca cca atc gcc cca tgc tgc aga gcc ctg aac gat cta cgg ttt   911
Arg Ala Pro Ile Ala Pro Cys Cys Arg Ala Leu Asn Asp Leu Arg Phe
        290                 295                 300

gtg aat act aga aac cta cga cgt gct gca tgc cgc tgc ctc gta ggg   959
Val Asn Thr Arg Asn Leu Arg Arg Ala Ala Cys Arg Cys Leu Val Gly
    305                 310                 315

gta gtg aac cgg aac ccc ggt ctg aga cga aac cct aga ttt cag aac   1007
Val Val Asn Arg Asn Pro Gly Leu Arg Arg Asn Pro Arg Phe Gln Asn
320                 325                 330                 335

att cct cgt gat tgt cgc aac acc ttt gtt cgt ccc ttc tgg tgg cgt   1055
Ile Pro Arg Asp Cys Arg Asn Thr Phe Val Arg Pro Phe Trp Trp Arg
                340                 345                 350

cca aga att caa tgc ggc agg att aac taa tagagctc                 1093
Pro Arg Ile Gln Cys Gly Arg Ile Asn
            355                 360
```

<210> 41
<211> 360
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<400> 41

```
Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
  1               5                  10                  15

Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
             20                  25                  30

Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
         35                  40                  45

Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
     50                  55                  60

Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ala Asn
 65                  70                  75                  80

Ala Glu Glu Ala Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu Leu Ala
                 85                  90                  95

Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp Gln Lys Leu Cys Gln Arg
            100                 105                 110
```

```
Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys
        115                 120                 125

Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr
    130                 135                 140

Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys Ala Asn Ala
145                 150                 155                 160

Glu Glu Ala Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu Leu Ala Gln
                165                 170                 175

Glu Glu Ala Pro Val Tyr Ser Glu Asp Asp Gly Val Lys Leu Cys Asp
            180                 185                 190

Val Pro Ser Gly Thr Trp Ser Gly His Cys Gly Ser Ser Ser Lys Cys
        195                 200                 205

Ser Gln Gln Cys Lys Asp Arg Glu His Phe Ala Tyr Gly Gly Ala Cys
    210                 215                 220

His Tyr Gln Phe Pro Ser Val Lys Cys Phe Cys Lys Arg Gln Cys Ala
225                 230                 235                 240

Asn Ala Glu Glu Ala Ala Ala Ala Ile Pro Glu Ala Ser Glu Glu Leu
                245                 250                 255

Ala Gln Glu Glu Ala Pro Val Tyr Ser Glu Asp Gln Asn Ile Cys Pro
            260                 265                 270

Arg Val Asn Arg Ile Val Thr Pro Cys Val Ala Tyr Gly Leu Gly Arg
        275                 280                 285

Ala Pro Ile Ala Pro Cys Cys Arg Ala Leu Asn Asp Leu Arg Phe Val
    290                 295                 300

Asn Thr Arg Asn Leu Arg Arg Ala Ala Cys Arg Cys Leu Val Gly Val
305                 310                 315                 320

Val Asn Arg Asn Pro Gly Leu Arg Arg Asn Pro Arg Phe Gln Asn Ile
                325                 330                 335

Pro Arg Asp Cys Arg Asn Thr Phe Val Arg Pro Phe Trp Trp Arg Pro
            340                 345                 350

Arg Ile Gln Cys Gly Arg Ile Asn
        355                 360
```

<210> 42
<211> 485
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<220>
<221> CDS

<222> (3)..(476)

<400> 42

```
cc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt    47
   Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu
     1               5                  10                  15

ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc    95
Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys
                 20                  25                  30

gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac acg gga cat   143
Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His
             35                  40                  45

tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt   191
Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys
         50                  55                  60

cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt aaa   239
His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Lys
     65                  70                  75

aaa gcc gaa aag ctt gct caa gac aaa ctt aaa gcc gaa caa ctc atc   287
Lys Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu Ile
 80                  85                  90                  95

gga aag agg atc gga aag agg atc gga aag agg cag aag ttg tgc caa   335
Gly Lys Arg Ile Gly Lys Arg Ile Gly Lys Arg Gln Lys Leu Cys Gln
                100                 105                 110

agg cca agt cgt aca tgg tca gga gtc tgt gga aac aat aac gca tgc   383
Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys
            115                 120                 125

aag aat cag tgc att aga ctt gag aaa gca cga cat gga tct tgc aac   431
Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn
        130                 135                 140

tat cgt ttc cca gct cac aag tgt atc tgc tac ttt cct tgt taa       476
Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
    145                 150                 155

taggagctc                                                        485
```

<210> 43
<211> 157
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<400> 43

```
Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
  1               5                  10                  15

Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
             20                  25                  30
```

```
Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
         35                  40                  45

Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
     50                  55                  60

Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Lys Lys
 65                  70                  75                  80

Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu Ile Gly
                 85                  90                  95

Lys Arg Ile Gly Lys Arg Ile Gly Lys Arg Gln Lys Leu Cys Gln Arg
            100                 105                 110

Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys
        115                 120                 125

Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr
    130                 135                 140

Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
145                 150                 155
```

<210> 44
<211> 557
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<220>
<221> CDS
<222> (3)..(548)

<400> 44

```
cc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt    47
   Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu
     1               5                  10                  15

ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc    95
Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys
                 20                  25                  30

gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac acg gga cat   143
Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His
             35                  40                  45

tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt   191
Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys
         50                  55                  60

cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt aaa   239
His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Lys
     65                  70                  75
```

```
aaa gcc gaa aag ctt gct caa gac aaa ctt aaa gcc gaa caa ctc gct   287
Lys Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu Ala
 80                  85                  90                  95

caa gac aaa ctt aat gcc caa aag ctt gac cgt gat gcc aag aaa gtg   335
Gln Asp Lys Leu Asn Ala Gln Lys Leu Asp Arg Asp Ala Lys Lys Val
                100                 105                 110

gtt cca aac gtt gaa cat ccg atc gga aag agg atc gga aag agg atc   383
Val Pro Asn Val Glu His Pro Ile Gly Lys Arg Ile Gly Lys Arg Ile
            115                 120                 125

gga aag agg cag aag ttg tgc caa agg cca agt cgt aca tgg tca gga   431
Gly Lys Arg Gln Lys Leu Cys Gln Arg Pro Ser Arg Thr Trp Ser Gly
        130                 135                 140

gtc tgt gga aac aat aac gca tgc aag aat cag tgc att aga ctt gag   479
Val Cys Gly Asn Asn Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu
    145                 150                 155

aaa gca cga cat gga tct tgc aac tat cgt ttc cca gct cac aag tgt   527
Lys Ala Arg His Gly Ser Cys Asn Tyr Arg Phe Pro Ala His Lys Cys
160                 165                 170                 175

atc tgc tac ttt cct tgt taa taggagctc                           557
Ile Cys Tyr Phe Pro Cys
                180
```

<210> 45
<211> 181
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<400> 45

```
Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
  1               5                  10                  15

Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
             20                  25                  30

Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
         35                  40                  45

Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
     50                  55                  60

Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Lys Lys
 65                  70                  75                  80

Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala Glu Gln Leu Ala Gln
                 85                  90                  95

Asp Lys Leu Asn Ala Gln Lys Leu Asp Arg Asp Ala Lys Lys Val Val
             100                 105                 110

Pro Asn Val Glu His Pro Ile Gly Lys Arg Ile Gly Lys Arg Ile Gly
```

```
        115                 120                 125

Lys Arg Gln Lys Leu Cys Gln Arg Pro Ser Arg Thr Trp Ser Gly Val
    130                 135                 140

Cys Gly Asn Asn Asn Ala Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys
145                 150                 155                 160

Ala Arg His Gly Ser Cys Asn Tyr Arg Phe Pro Ala His Lys Cys Ile
                165                 170                 175

Cys Tyr Phe Pro Cys
            180
```

<210> 46
<211> 485
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<220>
<221> CDS
<222> (3)..(476)

<400> 46

```
cc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt    47
   Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu
     1               5                  10                  15

ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc    95
Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys
                20                  25                  30

gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac acg gga cat   143
Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His
            35                  40                  45

tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt   191
Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys
        50                  55                  60

cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt gcc   239
His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ala
    65                  70                  75

agt act act gtg gat cac caa gct gat gtt gct gcc acc aaa act atc   287
Ser Thr Thr Val Asp His Gln Ala Asp Val Ala Ala Thr Lys Thr Ile
80                  85                  90                  95

gga aag agg atc gga aag agg atc gga aag agg cag aag ttg tgc caa   335
Gly Lys Arg Ile Gly Lys Arg Ile Gly Lys Arg Gln Lys Leu Cys Gln
                100                 105                 110

agg cca agt cgt aca tgg tca gga gtc tgt gga aac aat aac gca tgc   383
Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys
            115                 120                 125
```

```
aag aat cag tgc att aga ctt gag aaa gca cga cat gga tct tgc aac   431
Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn
        130                 135                 140

tat ctg ttc cca gct cac aag tgt atc tgc tac ttt cct tgt taa       476
Tyr Leu Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
    145                 150                 155

taggagctc                                                         485


<210> 47
<211> 157
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      sequence

<400> 47
Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
  1               5                  10                  15

Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
             20                  25                  30

Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
         35                  40                  45

Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
     50                  55                  60

Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ala Ser
 65                  70                  75                  80

Thr Thr Val Asp His Gln Ala Asp Val Ala Ala Thr Lys Thr Ile Gly
                 85                  90                  95

Lys Arg Ile Gly Lys Arg Ile Gly Lys Arg Gln Lys Leu Cys Gln Arg
            100                 105                 110

Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys
        115                 120                 125

Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr
    130                 135                 140

Leu Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
145                 150                 155


<210> 48
<211> 488
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
```

sequence

<220>
<221> CDS
<222> (3)..(479)

<400> 48
cc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt 47
Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu
1 5 10 15

ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc 95
Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys
20 25 30

gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac acg gga cat 143
Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His
35 40 45

tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt 191
Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys
50 55 60

cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt tcc 239
His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser
65 70 75

aac gcg gcc gac gag gtg gct acc cag ctg ttg aat ttt gac ctt ctt 287
Asn Ala Ala Asp Glu Val Ala Thr Gln Leu Leu Asn Phe Asp Leu Leu
80 85 90 95

aag ctt gcg gga gac gtc gag tcc aac cct ggg ccc cag aag ttg tgc 335
Lys Leu Ala Gly Asp Val Glu Ser Asn Pro Gly Pro Gln Lys Leu Cys
100 105 110

caa agg cca agt cgt aca tgg tca gga gtc tgt gga aac aat aac gca 383
Gln Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala
115 120 125

tgc aag aat cag tgc att aga ctt gag aaa gca cga cat gga tct tgc 431
Cys Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys
130 135 140

aac tat cgt ttc cca gct cac aag tgt atc tgc tac ttt cct tgt taa 479
Asn Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
145 150 155

taggagctc 488

<210> 49
<211> 158
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
sequence

<400> 49
Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe

```
  1               5                  10                  15

Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
             20                  25                  30

Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
         35                  40                  45

Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
     50                  55                  60

Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser Asn
 65                  70                  75                  80

Ala Ala Asp Glu Val Ala Thr Gln Leu Leu Asn Phe Asp Leu Leu Lys
                 85                  90                  95

Leu Ala Gly Asp Val Glu Ser Asn Pro Gly Pro Gln Lys Leu Cys Gln
            100                 105                 110

Arg Pro Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys
        115                 120                 125

Lys Asn Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn
    130                 135                 140

Tyr Arg Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
145                 150                 155
```

<210> 50
<211> 575
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<220>
<221> CDS
<222> (3)..(566)

<400> 50

```
cc atg gtg aat cgg tcg gtt gcg ttc tcc gcg ttc gtt ctg atc ctt    47
   Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu
     1               5                  10                  15

ttc gtg ctc gcc atc tca gat atc gca tcc gtt agt gga gaa cta tgc    95
Phe Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys
                 20                  25                  30

gag aaa gct agc aag acg tgg tcg ggc aac tgt ggc aac acg gga cat   143
Glu Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His
             35                  40                  45

tgt gac aac caa tgt aaa tca tgg gag ggt gcg gct cac gga gcg tgt   191
Cys Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys
         50                  55                  60
```

```
cat gtg cgt aac ggg aaa cac atg tgt ttc tgt tac ttc aat tgt tcc   239
His Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser
 65                  70                  75

aac gcg gcc gac gag gtg gct acc cag ctg ttg aat ttt gac ctt ctt   287
Asn Ala Ala Asp Glu Val Ala Thr Gln Leu Leu Asn Phe Asp Leu Leu
 80                  85                  90                  95

aag ctt gcg gga gac gtc gag tcc aac cct ggg ccc atg gct aag ttt   335
Lys Leu Ala Gly Asp Val Glu Ser Asn Pro Gly Pro Met Ala Lys Phe
                100                 105                 110

gcg tcc atc atc gca ctt ctt ttt gct gct ctt gtt ctt ttt gct gct   383
Ala Ser Ile Ile Ala Leu Leu Phe Ala Ala Leu Val Leu Phe Ala Ala
            115                 120                 125

ttc gaa gca cca aca atg gtg gaa gca cag aag ttg tgc caa agg cca   431
Phe Glu Ala Pro Thr Met Val Glu Ala Gln Lys Leu Cys Gln Arg Pro
        130                 135                 140

agt cgt aca tgg tca gga gtc tgt gga aac aat aac gca tgc aag aat   479
Ser Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys Asn
    145                 150                 155

cag tgc att aga ctt gag aaa gca cga cat gga tct tgc aac tat cgt   527
Gln Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr Arg
160                 165                 170                 175

ttc cca gct cac aag tgt atc tgc tac ttt cct tgt taa taggagctc     575
Phe Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
                180                 185
```

<210> 51
<211> 187
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<400> 51

```
Met Val Asn Arg Ser Val Ala Phe Ser Ala Phe Val Leu Ile Leu Phe
  1               5                  10                  15

Val Leu Ala Ile Ser Asp Ile Ala Ser Val Ser Gly Glu Leu Cys Glu
             20                  25                  30

Lys Ala Ser Lys Thr Trp Ser Gly Asn Cys Gly Asn Thr Gly His Cys
         35                  40                  45

Asp Asn Gln Cys Lys Ser Trp Glu Gly Ala Ala His Gly Ala Cys His
     50                  55                  60

Val Arg Asn Gly Lys His Met Cys Phe Cys Tyr Phe Asn Cys Ser Asn
 65                  70                  75                  80

Ala Ala Asp Glu Val Ala Thr Gln Leu Leu Asn Phe Asp Leu Leu Lys
                 85                  90                  95
```

Leu Ala Gly Asp Val Glu Ser Asn Pro Gly Pro Met Ala Lys Phe Ala
100 105 110

Ser Ile Ile Ala Leu Leu Phe Ala Ala Leu Val Leu Phe Ala Ala Phe
115 120 125

Glu Ala Pro Thr Met Val Glu Ala Gln Lys Leu Cys Gln Arg Pro Ser
130 135 140

Arg Thr Trp Ser Gly Val Cys Gly Asn Asn Asn Ala Cys Lys Asn Gln
145 150 155 160

Cys Ile Arg Leu Glu Lys Ala Arg His Gly Ser Cys Asn Tyr Arg Phe
165 170 175

Pro Ala His Lys Cys Ile Cys Tyr Phe Pro Cys
180 185

<210> 52
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
Oligonucleotide

<220>
<221> misc_feature
<222> (9)
<223> n is any residue

<220>
<221> misc_feature
<222> (12)
<223> n is any residue

<220>
<221> misc_feature
<222> (15)
<223> n is any residue

<400> 52
carttraant ancanaaarc acat 24

<210> 53
<211> 8
<212> PRT
<213> Dahlia merckii

<400> 53
Met Cys Phe Cys Tyr Phe Asn Cys
1 5

<210> 54
<211> 20

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
Oligonucleotide

<400> 54
aaacacatgt gtttcccatt 20

<210> 55
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
Oligonucleotide

<400> 55
agcgtgtcat gtgcgtaat 19

<210> 56
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
Oligonucleotide

<400> 56
taaagaaacc gacccttca cgg 23

<210> 57
<211> 107
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 57
atgcatccat ggtgaatcgg tcggttgcgt tctccgcgtt cgttctgatc cttttcgtgc 60
tcgccatctc agatatcgca tccgttagtg gagaactatg cgagaaa 107

<210> 58
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 58
aaaccgaccg agctcacgga tgttcaacgt ttggaac 37

<210> 59
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 59
agcaagcttt tcgggagctc aacaattgaa gtaa 34

<210> 60
<211> 89
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 60
gcctttggca caacttctgt cctggctcca cgtcctctgg ggtagccacc tcgtcagcag 60
cgttggaaca attgaagtaa cagaaacac 89

<210> 61
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 61
ttagagctcc tattaacaag gaaagtagc 29

<210> 62
<211> 55
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 62
gcctttggca caacttctgc ctctttccga tgagttgttc ggctttaagt ttgtc 55

<210> 63
<211> 53
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 63
gcctttggca caacttctgc ctctttccga tcggatgttc aacgtttgga acc 53

<210> 64
<211> 101
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 64
gcctttggca caacttctgc ctctttccga tagttttggt ggcagcaaca tcagcttggt 60
gatccacagt agtactggca caattgaagt aacagaaaca c 101

<210> 65
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
sequence

<400> 65
Lys Asp Glu Leu
1

<210> 66
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
Oligonucleotide

<220>
<221> misc_feature
<222> (9)
<223> n is any residue

<220>
<221> misc_feature
<222> (12)
<223> n is any residue

<220>
<221> misc_feature
<222> (21)
<223> n is any residue

<400> 66
atggcsaanm rntcrgttgc ntt 23

<210> 67
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<400> 67
Ile Gly Lys Arg
1

<210> 68
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 68
aggaagttca tttcatttgg 20

<210> 69
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Determined N-terminal sequence

<400> 69
Glu Leu Cys Glu Lys Ala Ser
1 5

<210> 70
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Determined N-terminal sequence

<400> 70
Asp Val Glu Pro Gly Gln Lys
1 5

<210> 71
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Determined N-terminal sequence

<400> 71
Leu Ile Gly Lys Arg Gln Lys
1 5

<210> 72
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Predicted C-terminal sequence

<400> 72
Cys Tyr Phe Asn Cys Ser
1 5

<210> 73
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Predicted C-terminal sequence

<400> 73
Ile Cys Tyr Phe Pro Cys
1 5

<210> 74
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Predicted C-terminal sequence

<400> 74
Cys Tyr Phe Asn Pro Ser
1 5

<210> 75
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Predicted C-terminal sequence

<400> 75
Cys Tyr Phe Asn Cys Lys
1 5

<210> 76
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Predicted C-terminal sequence

<400> 76
Cys Tyr Phe Asn Cys Ala
1 5

<210> 77
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<400> 77
Ile Gly Lys Arg Ile Gly Lys Arg Ile Gly Lys Arg
1 5 10

<210> 78
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<400> 78
Val Ser Gly Glu Leu Cys
1 5

<210> 79
<211> 22
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<400> 79

Phe Asn Cys Ser Asn Ala Ala Asp Glu Val Ala Thr Pro Glu Asp Val
1 5 10 15

Glu Pro Gly Gln Lys Leu
20

<210> 80
<211> 26
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<400> 80
Phe Asn Cys Lys Lys Ala Glu Lys Leu Ala Gln Asp Lys Leu Lys Ala
1 5 10 15

Glu Gln Leu Ile Gly Lys Arg Gln Lys Leu
20 25

<210> 81
<211> 26
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic sequence

<400> 81
Phe Asn Cys Ala Ser Thr Thr Val Asp His Gln Ala Asp Val Ala Ala
1 5 10 15

Thr Lys Thr Ile Gly Lys Arg Gln Lys Leu
20 25